

***THE EXPERIMENTAL NEIGHBORHOOD PROBABILISTIC EXCESSIVE RAINFALL
OUTLOOK AS GLEANED FROM THE 2014 AND 2015 FLASH FLOOD AND
EXCESSIVE RAINFALL EXPERIMENTS***

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ABSTRACT

As the national center responsible for providing QPF and flash flood forecast guidance, NCEP's Weather Prediction Center (WPC) and the Hydrometeorology Testbed at WPC (HMT-WPC) are uniquely positioned to address the challenges associated with flash flood forecasting. WPC currently issues an operational product indicating the threat of flash floods: the Excessive Rainfall Outlook (ERO). The ERO is issued at scheduled intervals throughout the day as part of WPC's Day 1–3 QPF product suite and indicates the probability of exceeding flash flood guidance (FFG) at a point across the contiguous United States (CONUS). This product is intended to provide several days of advance notice about the potential for flash flooding. In recent years, WPC has been seeking ways to improve the ability of the ERO to most effectively convey flash flood risk to the WFO, media and emergency management community. The need for a more modern probabilistic product and to align with other NWS National Centers has driven this research.

In an effort to improve flash flood forecasts and verification both at WPC and across the NWS, HMT-WPC has conducted three years of the Flash Flood and Intense Rainfall (FFaIR) Experiment which brings together participants from the operational forecasting, model development, and research communities during the months of June and July to explore the challenges associated with flash flood forecasting. In particular, the experiments have focused on evaluating the utility of high-resolution convection-allowing models and ensembles for short-term flash flood forecasts as well as exploring new tools and approaches for combining meteorological and hydrologic information for the purpose of testing improvements to WPC's operational Excessive Rainfall Outlook (ERO). During the experiments, participants used a combination of operational and experimental model output and derived probabilistic tools to create a series of experimental neighborhood-probabilistic ERO products. This testing of the redefined ERO has proven to increase its current value in the realm of decision support services. The statistical analysis and research results from testing the different approaches to the ERO will be described in this presentation including evidence which supports moving ahead with the redefinition.